

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 50-443/81-02
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Docket No. 50-443
50-444
License No. CPPR-135 Priority -- Category A
CPPR-136

Licensee: Public Service Company of New Hampshire
1000 Elm Street
Manchester, New Hampshire 03105

Facility Name: Seabrook Station, Units 1 and 2

Inspection at: Seabrook, New Hampshire

Inspection conducted: February 2-27, 1981

Inspectors: Al Cerne
A.C. Cerne, Resident Inspector
FOR: Al Cerne
A.A. Varela, Reactor Inspector

3/11/81
date signed
3/11/81
date signed

Approved by: R.M. Gallo
R.M. Gallo, Chief, Projects Section 1A,
Division of Resident and Project
Inspection

date signed
3/16/81
date signed

Inspection Summary:

Unit 1 Inspection on February 2-27, 1981 (Report No. 50-443/81-02)

Areas Inspected: Routine inspection by the resident inspector and a regional based inspector of work activities relative to pipe welding and support erection, embed installation and structural steel erection, and component maintenance and installation. The inspectors also reviewed licensee action on previously identified items and 50.55(e) reports and performed plant inspection-tours. The inspection involved 62 inspector-hours, including 3 off-shift hours, by two NRC inspectors.

Results: Of the four areas inspected, one item of noncompliance was identified in one area--failure to perform magnetic particle examination on threaded anchor bolts, as required by the Specification (paragraph 5b).

Unit 2 Inspection on February 2-27, 1981 (Report No. 50-444/81-02)

Areas Inspected: Routine inspection by the resident inspector and a regional based inspector of licensee action on previously identified items and 50.55(e) reports and a plant inspection-tour. The inspection involved 12 inspector-hours by two NRC inspectors.

Results: No items of noncompliance were identified.

DETAILS

1. Persons Contacted

Yankee Atomic Electric Company

F. W. Bean, QA Engineer
B. B. Beckley, Manager of Nuclear Projects (PSNH-Manchester)
D. L. Covill, QA Engineer
J. DeVincentis, Project Manager (Framingham)
W. J. Gagnon, QA Engineer
R. E. Guillette, QA Engineer (Framingham)
J. H. Herrin, Site Manager (PSNH)
G. F. McDonald, Jr., QA Engineer (Framingham)
W. J. Miller, QA Manager (Framingham)
R. P. Pizzuti, Construction Manager (Framingham)
J. W. Singleton, Field QA Manager
H. E. Wingate, Project Engineer (Framingham)
C. M. Worster, Construction Supervisor (PSNH)

United Engineers and Constructors (UE&C)

A. H. Ayers, QA Engineer
R. H. Beaumont, QA Engineer
R. L. Brown, Assistant Liaison Engineer
M. A. Edgar, Resident Construction Engineer
J. A. Grusetskie, Assistant Liaison Engineer
G. R. Henson, Document Control
D. C. Lambert, Field Superintendent of QA
F. A. Long, QA Engineer
R. A. Mills, Assistant Liaison Engineer
J. J. Murphy, Area Engineer
G. Shaw, Structural Steel Superintendent
R. D. Tancibok, QA Supervisor
R. D. Witt, Containment Area Superintendent

Perini Power Constructors (PPC)

P. E. Bruce, Site QA Manager
A. G. Schroeder, Lead Structural Inspector
R. J. Vachon, Chief Building Inspector

Royal Insurance

J. C. Anzivino, Authorized Nuclear Inspector
G. Voishinis, Authorized Nuclear Inspector

Pullman-Higgins (Pullman)

D. M. Daniels, NDE Technician
R. G. Davis, Field QA Manager
R. R. Donald, Field QA Supervisor
J. Godleski, QA Records Supervisor
P. Grasewicz, Lead Hanger Engineer
C. Scannell, Chief Field Engineer
D. Wilson, Field Engineer

2. Plant Inspection-Tours (Units 1 and 2)

The inspector observed work activities in-progress, completed work and plant status in several areas of the plant during general inspections of the plant. The inspector examined work for any obvious defects or noncompliance with regulatory requirements or license conditions. Particular note was taken of presence of quality control inspectors and quality control evidence such as inspection records, material identification, nonconforming material identification, housekeeping and equipment preservation. The inspector interviewed craft personnel, supervision, and quality inspection personnel as such personnel were available in the work areas.

Specifically the inspector observed core drilling of a concrete wall in the Equipment Vault for piping penetrations and verified engineering authorization (ECA 08/0733 B) of such work to include consideration of the maximum number of rebar that could be cut or damaged. He also spot-checked various controlled documents in their field location for proper revision and checked the status of certain nonsafety activities (eg: reactor cavity liner installation and temporary electrical support erection) for the adequacy of the control over construction interface with safety-related material.

No items of noncompliance were identified.

3. Licensee Action on Previous Inspection Findings

(Closed) Unresolved item (443/79-07-04 and 444/79-07-03): Status of ASME Certifications. The inspector examined current ASME Certificates of Authorization, to include both the owner's certificate and contractor N-Stamps, for applicability, expiration dates, and the status of site surveys. UE&C has current N-Stamp authority and Pullman, having passed an ASME site audit during the later part of 1980, has been issued NA and NPT-Stamp authority. PDM is constructing the containment liners under New Hampshire State Special Waiver of ASME III, Division 2 stamping requirements, and is scheduled for ASME site audit in mid 1981. ASME authority for the work of other contractors conforms to the governing requirements of either the State Special Waiver or the corporate N-Stamp certification, subject to future site audits.

The inspector's review of documents relative to the above certifications indicates that the ASME III, NA-3000 program has been effectively implemented at Seabrook Station. This item is resolved.

(Closed) Unresolved item (443/80-13-04): Qualification standards for different types of cable tray splice connection bolts. The inspector reviewed documentation which indicated that the three types of bolts supplied for use in cable tray connections at Seabrook are all certified to the SAE-5 standard, and thus meet engineering requirements. Discussion with QA personnel revealed that this bolt certification represents a bolting standard consistent with the bolts utilized in the seismic testing program for the cable tray system. This item is resolved.

(Closed) Noncompliance items (443/79-07-02, 443 and 444/79-08-06, and 443/79-09-01): Respectively, excess cadweld end void, inadequate UE&C procedure for prompt corrective action, and corrective action on rebar omissions. The inspector interviewed QA and engineering personnel and reviewed licensee action, to include procedural changes and interim corrective measures, relative to these three items of noncompliance. However, the individual corrective actions for each noncompliance appeared to be overshadowed by their relation to each other and to the potential significant deficiency on inadequate cadweld sleeve inspections, discussed in the NRC 80-04 report. At that time a question was raised as to the adequacy of the quality assurance program, particularly with regard to the deficient areas identified in the Perini (PPC) civil/structural scope of work.

During this current inspection, the inspector reviewed those measures taken to improve the QA program in the civil/structural area. YAEC & UE&C QA management initiated in April, 1980 a Supervisory Support Program (SSP) with the stated purpose to:

- "Provide information about PPC supervisory and technician strengths and weaknesses."
- "Assist PPC Supervision - QA and Craft - in avoiding errors and precluding problems, especially repetitive ones."
- "Evaluate the information developed and recommend personnel, programmatic, and functional improvements to PPC."

The SSP group, consisting of YAEC & UE&C personnel, conducted an intensive evaluation of PPC's QA/QC program and personnel from first level inspection through upper management. SSP monthly audit reports from May to July, 1980 periodically summarized the panel members' recommendations for interim action and provided summary evaluation on changes instituted by PPC. However, the following SSP recommended actions from August, 1980 appear incomplete:

- Provide an in-depth joint audit by YAEC and UE&C on the PPC QA/QC program.
- Provide final evaluation and follow-up of the SSP findings.

The inspector indicated to the licensee that the culmination of the total SSP effort with regard to these August recommendations appeared long overdue and underscored the importance of licensee verification of the effectiveness of the instituted QA program changes. The licensee responded by committing to a final evaluation of the Supervisory Support Program to date, complemented with a current summary of the Perini QA program status, with such action to be completed prior to April, 1981.

Pending NRC review of the licensee's follow-up actions with regard to the Perini QA program effectiveness, this issue is unresolved (443 and 444/81-02-01).

(Open) Noncompliance (443/80-13-03): Failure to control and document the engineering review and approval of a field initiated design change. The licensee's response to the subject NRC notice of violation was reviewed and interviews were held with QA and engineering personnel. The inspector indicated to the licensee that their response did not adequately address the programmatic design control aspects of this issue. While the results of an analysis done to justify the acceptability of the specific case were presented, no apparent recognition of the fact that this analysis was done after the fact was documented. Additionally in referencing certain Engineering Change Authorizations, contradictory information appears to have been provided.

The licensee has committed to the submittal of a revised response to the notice of violation, clarifying their position and the corrective actions being taken. Pending review and follow-up of this information by the NRC, this item remains open.

(Open) Unresolved item (443/80-12-01): Justification for multiple cadweld splices in series. The inspector reviewed UE&C Engineering Change Authorization (ECA) 10/0041C, approved on December 2, 1980, which establishes new criteria for the final QC inspection of cadweld sleeve end voids. New measurement techniques are established in line with both Erico standards and an intent to change the conservatism of the present system which has led to a high cadweld reject rate and multiple replacement splices. Additionally ECA 01/2127C directs that cadwelds be staggered a minimum of 24" and limits the number of cadweld splices on any single bar to two splices within a full bar development length of each cadweld in each direction. The inspector verified the adequacy of these changes with regard to both ACI 349 provisions and state-of-the-art considerations.

However, no documented information as to the identification and location of existing multiple splices on the same bar was available for review. The inspector requested that for the worst cases in high tensile stress areas, the acceptance of more than two splices within a full bar development length be evaluated and justified. Pending NRC review of this information and analysis, this item remains open.

4. 10CFR50.55(e) Report Closure

On November 6, 1979 the licensee telephonically reported to the NRC a significant deficiency under 10CFR50.55(e) with regard to discrepancies in concrete reinforcement drawings. On December 6, a final report, entitled "Discrepancy in Drawings with Respect to Design Calculation Concrete Reinforcement Requirements for the Control and Diesel Generator Buildings," was submitted in fulfillment of 50.55(e) written reporting requirements. At the time the drawing discrepancies were discovered at the UE&C home office in Philadelphia, no concrete had been placed at the specific affected locations, although some rebar dowels from previously placed concrete were lacking.

The NRC Region IV Vendor Inspection Branch performed an inspection of UE&C in Philadelphia on December 10-14, 1979. Investigation into the nature and causes of this design/drawing discrepancy problem led to findings supporting UE&C's conclusion that this was an isolated incident attributable to one man's erroneous action in violation of UE&C procedures. The corrective actions included a comparison of the drawings for all structures with reinforcement design calculations and additional UE&C design group personnel training. This item is considered closed.

5. Structural Steel and Embeds (Unit 1)

- a. The inspector observed the in-process erection of certain annulus structural steel members within the Unit 1 containment and checked the as-built configuration and condition of various connections. The general sequence of erection and inspection was evaluated with regard to the AISC Code of Standard Practice and specification requirements. The control measures over welder qualification and training were checked, as were certain Weld Data Card records. A question as to the sequence of inspection of clip angle tack welds, relative to the erection and bolting of the connected structural beams, was clarified by a licensee commitment to revise Perini Field Civil Construction Procedure, FCCP-156 to specify the conduct of tack weld inspection just prior to final welding.

UE&C engineering changes (ECA 01/1847C and 01/2069D) and Perini Nonconformance Report, NCR 741, affecting the annulus structural steel, were evaluated for disposition and justification and verified to have been accomplished in the field in accordance with specified requirements. Additional procedural criteria governing the erection of the annulus structural steel, as set forth in the following documents, were reviewed and spot-checked for field application.

- UE&C Specification 12-2, Revision 0.
- UE&C Procedure WS-3, Revision 1.
- Perini FCCP-153, Revision 2 and Welding Procedure Specification, WPS-156.7F.
- Perini Quality Assurance Procedure, QAP-10.8, Revision 3.

No items of noncompliance were identified.

- b. The inspector examined the in-place condition of certain embedded plates and anchorages within the Unit 1 containment and reviewed the procedural controls over embedded structural steel stud welding. Examination of the following procedures, discussion of criteria with QA personnel, and spot-check of completed stud welds in the field all indicate that AWS D1.1 requirements for stud welding are being followed.

- Perini FCCP-157, Revision 6.

-- Perini QAP-10.14, Revision 2.

-- UE&C Procedure MPS-3, Revision 2.

With regard to existing safety-related embeds to which nonsafety attachments are welded, the inspector noted, in closing a previous unresolved item in the 80-07 report, that controls over such welding were evident. A UE&C Specification WS-3, Revision 1, governs removal and inspection of such temporary attachment welds. However, during this current inspection the inspector noted at least one case where a temporary attachment had been removed in such a way as to potentially, adversely affect the safety-related embed plate. The particular plate in question had not yet been QA inspected. Also, Contractor Incident Interface Report No. 44 provided evidence to indicate that all such similar embed plates, with temporary supports scheduled for removal, would receive QA inspection. Thus, while any adverse impact would be identified and evaluated by the QA program, the inspector questioned why the WS-3 requirements were not apparently being applied to the actual removal of the subject attachments. Pending verification by the licensee that the removal of temporary supports to safety-related embeds, and not just their inspection, are being controlled in accordance with Specification WS-3 criteria, this item is unresolved (443/81-02-02).

The inspector also examined the condition of the Embedded Reactor Supports (ERS-1 and ERS-2) within the Unit 1 reactor cavity. He reviewed the documentation package to include material certifications and test reports and evaluated the installed embeds with regard to UE&C Drawing F101415, Revision 5, and UE&C Specification 18-1, Revision 5. While field dimensions and support configuration were spot-checked and verified, the inspector noted that no record existed of magnetic particle examination (MT) of the eight 3-inch, threaded studs which had been provided as integral parts of ERS-1 and 2. The licensee and the supplier later indicated that MT had not been accomplished, but that it was required in accordance with Specification 18-1 provisions for the examination of the final machined parts on anchor bolts with nominal sizes greater than 2 inches. Steps were taken to schedule a field MT examination of the nonembedded portion of the subject threaded studs, with commitment for engineering evaluation of the embedded portion which cannot be examined. The inspector indicated to the licensee that this failure to perform a procedurally required magnetic particle examination on the threaded studs of ERS-1 and 2 prior to installation represented a noncompliance with regard to 10CFR50, Appendix B, Criterion V (443/81-02-03).

6. Safety-Related Piping (Unit 1)

a. Welding

The inspector observed welding on pipe spool 1-CS-355-02, field weld F0201, and pipe hanger 1-814-SH-03. Field Weld Process Sheets, Weld Rod Stores Requisitions, and drawings were checked to verify identification,

documentation, and inspection of criteria procedurally required for quality welding. Actual welding conditions, the sequence of operations, and certification records for weld rod material were spot-checked. The inspector also noted the presence or availability of QC welding inspectors and checked their inspection verification of hold point items on the weld process sheets.

The condition of certain shop welds on the following pipe spools was examined and discussed with QA personnel:

- 1-CC-829-1-152-16"-3
- 1-CBS-1216-2-301-8"-20

On the latter spool piece, a shop weld overgrind condition, for which the on-site records do not uniquely indicate that a liquid penetrant (LPT) examination was performed, was subjected to further field testing and evaluation by the licensee as follows:

- Field radiographic examination of the shop weld was conducted and the film compared with the vendor supplied radiographic film.
- A field LPT surface examination of the shop weld overgrind area was performed.
- A field ultrasonic wall thickness measurement was taken on the pipe in the area of deepest grinding.

The inspector reviewed the results and records of these tests, as well as the follow-up action by the licensee to address the potential problem of vendor grinding at or near shop welds after the completion of final ASME Code NDE. He has no further questions on this issue at this time.

No items of noncompliance were identified.

b. Pipe Supports

The inspector checked the in-place welded condition of the following pipe supports and compared them with their Pullman detail drawings:

- 332-RG-13
- 360-RG-24
- MS-1206-SG-04

Positioning, configuration, dimensions, tolerance, and the inspection controls for these hangers were all spot-checked. The treatment of supports carrying nonsafety piping as safety-related, where potential impact on ASME material was identifiable, was verified. The spacing and

placement of concrete kwik-bolts for another hanger (MS-1201-SG-05) was checked relative to the effect of existing holes on the cone of influence, and thus the strength, of the kwik-bolt installation.

No items of noncompliance were identified.

c. Pipe Material

The inspector examined the condition of the following spool pieces at their field locations, but not yet installed in the Unit 1 containment:

-- 1-CS-360-8-601-4"-3

-- 1-RC-97-1-2501-3"-6

Material type, heat traceability, configuration, and ASME classification were all spot-checked against the respective Dravo sketches (E2936-836 and 1294). The record of shop weld NDE was reviewed and evaluated with regard to ASME, Section III requirements. Marking and temporary storage protection were also checked in the field for both spool pieces.

No items of noncompliance were identified.

7. Safety-Related Components (Unit 1)

The inspector checked the field storage or installed condition and the maintenance status of the following components:

- Regenerative Heat Exchanger 1-CS-E2
- Primary Component Coolant Valves
 - 1-CC-V-0266 and 0272 (motor operated)
 - 1-CC-V-0447 (air operated)
 - 1-CC-V-0258 (manual)

Identification, packaging, storage position, and status were all spot-checked. Maintenance activities were discussed with the UE&C QC inspector and the procedural handling, storage, and maintenance of the components were verified to be in accordance with the provisions of the following documents:

- UE&C Field General Construction Procedures FGCP-6, Revision 1, and FGCP-9, Revision 6.
- UE&C Quality Control Procedure QCP-13, Revision 10.
- UE&C Specifications 248-5 and 248-45, Revision 1.
- UE&C Procedure MPS-1, Revision 5.

-- Westinghouse NSSS Component Receiving and Storage Criteria,
Volume 1, NSD, March 76.

Additionally the record package for valve V0447 was reviewed for certified material and test reports in line with specification requirements. Installation of V0447 was also verified for location and line system compliance with UE&C Drawing D800799, Revision 1.

No items of noncompliance were identified.

8. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items disclosed during the inspection are discussed in Paragraphs 3 and 5b.

9. Management Meetings

At periodic intervals during the course of this inspection, meetings were held with senior plant management to discuss the scope and findings of this inspection.